

This listing of claims will replace all prior versions of claims in the application.

Claims 1-40. (cancelled)

Claim 41. (new) A method for forming a photoresist relief image comprising:

- (a) applying a coating layer of a photoresist composition on a substrate, the photoresist composition comprising a photoactive component and a resin component, the resin component comprising a polymer being at least substantially free of ionic metal contaminants;
- (b) exposing the photoresist composition coating layer to patterned activating radiation; and
- (c) developing the exposed photoresist coating layer to provide a photoresist relief image.

Claim 42. (new) The method of claim 41 further comprising preparing the polymer by steps comprising admixing one or more polymerizable monomers with a polymerization initiator which has been purified prior to admixing with the one or more monomers.

Claim 43. (new) The method of claim 42 further comprising purifying the polymerization initiator with an aqueous solvent prior to admixing the initiator with the one or more monomers.

Claim 44. (new) The method of claim 42 further comprising purifying the initiator with an organic solvent prior to admixing the initiator with the one or more monomers.

Claim 45. (new) The method of claim 41 wherein the photoresist composition is a chemically-amplified positive photoresist and the polymer comprises photoacid-labile groups.

Claim 46. (new) The method of claim 45 wherein the polymer comprises polymerized acrylate groups.

Claim 47. (new) The method of claim 45 wherein the polymer comprises phenolic groups.

Claim 48. (new) The method of claim 45 wherein the initiator is a free radical polymerization initiator.

Claim 49. (new) The method of claim 45 wherein the initiator is an azo polymerization initiator.

Claim 50. (new) A method for forming a photoresist relief image comprising:

- (a) treating a polymerization initiator to remove metal contaminants and preparing a polymer with the treated initiator, wherein the treated polymerization initiator has a concentration of each of Na, Ca and Fe of less than 20 ppm;
- (b) admixing the polymer and one or more photoacid generator compounds to prepare a photoresist composition;
- (c) applying a coating layer of a photoresist composition on a substrate;
- (d) exposing the photoresist composition coating layer to patterned activating radiation; and
- (e) developing the exposed photoresist coating layer to provide a photoresist relief image.

Claim 51. (new) The method of claim 50 further comprising treating the polymerization initiator with an aqueous solvent prior to preparing the polymer.

Claim 52. (new) The method of claim 50 further comprising treating the initiator with an organic solvent prior to preparing the polymer.

Claim 53. (new) The method of claim 50 wherein the photoresist composition is a chemically-amplified positive photoresist and the polymer comprises photoacid-labile groups.

Claim 54. (new) The method of claim 50 wherein the polymer comprises polymerized acrylate groups.

Claim 55. (new) The method of claim 50 wherein the photoresist layer is exposed with radiation having a wavelength of less than 200 nm.

Claim 56. (new) The method of claim 50 wherein the treated polymerization initiator has a concentration of each of Na, Ca and Fe of less than 500 ppb.

Claim 57. (new) The method of claim 50 wherein the treated polymerization initiator has a concentration of each of Na, Ca and Fe of less than 250 ppb.

Claim 58. (new) The method of claim 50 wherein the initiator is a free radical polymerization initiator.

Claim 59. (new) The method of claim 50 wherein the initiator is an azo polymerization initiator.

Claim 60. (new) The method of claim 55 wherein the substrate is a silicon microelectronic wafer substrate and areas bared of photoresist by development are etched.